Jennifer Boehme, Ph.D.
Environmental and Marine Scientist, Expertise in Program Management and Science Policy
211 Maple St. Apt. 1, Ypsilanti, MI
M: 410-688-9963 Email: jennifer@glos.org

Summary of Qualifications

- US Citizen with a Ph.D. in Marine Science (Chemical Oceanography) from the University of South Florida
- Experienced at binational policy/research interface, assisting governments of the United States and Canada in resolving Great Lakes water quality issues
- Building positive working relationships with Great Lakes rights holders and stakeholders
- Strategic development and project management for government and university research laboratories
- Leadership Education and Development Institute Program (LEAD) Certificate, US Office of Personnel Management, 2022

Chief Executive Officer, Great Lakes Observing System, Ann Arbor, MI August 2023 – Present

- Manage overall GLOS resources, ensuring compliance with federal grant requirements.
- Guide and support GLOS Board of Directors.
- Direct strategic planning and annual objectives to meet user needs in a service-oriented approach.
- Manage day-to-day operations of data collection, management, and product development activities.
- Handle human resources, including hiring, evaluations, compensation, and policy establishment.
- Oversee financial functions, including audit, budget, payroll, and policy development.
- Support the design and implementation of recruitment, engagement, and communications strategies for members, clients, and stakeholders.
- Develop and oversee competitive bid processes, proposal reviews, scope of work, and budget negotiations for contracted activities.

Science Advisor, International Joint Commission, GS-14 July 2012 – July 2023

- Interprets regulatory and legislative and policy, advising management and Commission leadership on U.S-Canadian environmental-health data harmonization, human health and water quality issues
- Assists with developing and implementing budgets and project operating plans for the Great Lakes Regional Office (GLRO), generating funding from the US and Canadian governments
- Manages recruitment, engagement, project proposals, and budgets for binational Health Professionals Advisory Board, applying the One Health approach and perspectives of Tribes and First Nations to Great Lakes environmental issues
- Internal and external communication and engagement, designs communications plans and advances talking points and products for Commissioners and IJC boards
- Initiated IJC-Sea Grant Fellowship program; secures budgets, supervises and reviews performance of fellows.
- Negotiates and manages contracts originating in US and Canada national systems (US State Department / Global Affairs Canada) to support human resource needs for the office and boards ($900,000)
- Assist with analysis of Canadian labor policy and its appropriate implementation at GLRO
- Represents IJC on interagency panels and stakeholder boards

Senior Communications Consultant, National Science Foundation (NSF) October 2011 - June 2012

- Strategic communications for congressional affairs, geosciences and science education in Office of Legislative and Public Affairs (OLPA)
- Article writing, visual media development and coordination of two congressional events via OLPA
- Assistant editor for NSF monthly newsletter *Current*
- Speech writing for NSF Director and management

AAAS Science & Technology Policy Fellow September 2009-August 2011

National Science Foundation, Biological Sciences Directorate, Biological Infrastructure Division

- Organized and managed writing committee and intra-directorate approval process for Foundation-wide solicitation, Research Coordination Networks (RCN), to promote international collaborations, encourage interdisciplinary science and broaden participation of underrepresented groups
- Staffing and site visits for the National Ecological Observation Network program
- Developed research strategies and technical content for interagency (NOAA, EPA, NSF) solicitation to develop climate adaptation management tools for water and wastewater utilities
- Planning and portfolio activities for review panels of Biological Infrastructure Division (Instrument Development for Biological Research)
- Implemented the 2010 RCN for Biological Sciences investigator meeting emphasizing network development, international participation and funding opportunities; participants indicated the topics and biannual structure were timely, useful and should be incorporated into RCN framework in other directorates

National Oceanographic and Atmospheric Administration, Climate Program Office, Nov. 2010 – Apr. 2011

- Expanded partnerships among NOAA, the Western Governors Association, Depts. of Interior and Agriculture; drafted preliminary climate adaptation MOU. Adopted June 30, 2011
- Supported development of NOAA's Next Generation Strategic Plan for climate mitigation, adaptation and regional climate initiatives
- Liaison for: USGCRP working group, Interagency Group on Integrative Modeling; Extreme Events Interagency Working Group: Water and Wastewater Utilities

Ecologist, Smithsonian Environmental Research Center, Edgewater, MD 2005-2009

- Established the Ballast Water Analytical Laboratory for fluorescence and trace metal analysis, supervising laboratory manager and 16 staff; originated in-house capability for analytical techniques and developed measurable goals, quality control and oversight practices
- Managed $300,000 multi agency budget (states CA, WA and OR),US Coast Guard (USCG), NOAA Sea Grant, and the New Zealand Ministry of Fisheries
- Conceived and coordinated research and monitoring, and supervised field personnel for 50 ballast water exchange verification (BWEV) field cruise/research operations in four US and four international port and coastal environments
- Refined approach to improve USCG regulation and management of BWEV for commercial ships in US ports to reduce ecological damage by invasive species transport
- Conducted proof-of-concept testing for handheld BWEV fluorometers developed by the USCG; performed comparative fluorometer analysis for setting chemical tracer regulatory thresholds
- Advised and trained stakeholders on the regulatory use of handheld fluorometers for BWEV monitoring and compliance for decision making, including and USCG boarding officers, international shipping companies, US state and federal regulators, and US port representatives

Assistant Research Scientist, Darling Marine Center, University of Maine 2002-09

- Principal investigator initiating program for paid sample analysis and data presentation; trained undergraduate and graduate interns in analytical techniques
- Co-principal investigator, evaluated physical and environmental origin of observed changes in biological, photochemical and geochemical cycling and particulate size of colloidal carbon in Damariscotta River Estuary and associated watersheds

Associate in Research, College of Marine Science, University of South Florida 2000-02

- Statistical analysis of changes in geochemistry and photochemistry in organic carbon as monitored by fluorescence in Florida watersheds, estuaries and the Gulf of Mexico
- Supervised Marine Fluorescence Laboratory, trained undergraduate and graduate researchers
- Planned and implemented cruises for testing of prototype in-situ fluorescence sensor
- Initiated contracted fluorescence analysis; developed operational and quality control capabilities for paid technical sample analysis and data presentation

Education

2000 Ph.D., College of Marine Science, University of South Florida, Tampa, FL
Dissertation: Artificial and Natural Fluorescence of Dissolved Organic Matter in the Tampa Bay Estuary
Advisor: Paula Coble

1993 B.S., Chemistry, Emory University, Atlanta, Georgia

Selected Publications, Articles and Media

1. Graydon, R.C, M. Mezzacapo, J. Boehme, S. Foldy, T. A. Edge, J. Brubacher, H. M. Chan, M. Dellinger, E. M. Faustman, J, B. Rose, T. K. Takaro. (2022) Associations between extreme precipitation, drinking water, and protozoan acute gastrointestinal illnesses in four North American Great Lakes cities (2009–2014). Journal of Water and Health 20(16). DOI: 10.2166/wh.2022.018
2. Great Lakes Connection, June 14, 2022.'Glosapalooza' celebrates data and how it benefits users of the Great Lakes.https://www.ijc.org/en/glosapalooza-celebrates-data-and-how-it-benefits-users-great-lakes
3. Great Lakes Connection, February 8, 2022.Heavy Storms Linked to Germs in Great Lakes Drinking Water: IJC Health Professionals Advisory Board Report.https://www.ijc.org/en/heavy-storms-linked-germs-great-lakes-drinking-water-ijc-health-professionals-advisory-board-report
4. IJC Health Professionals Advisory Board (2021). The Great Lakes Water Quality Centennial Study - Phase I Report.https://www.ijc.org/sites/default/files/2021-07/HPAB_CentennialStudy_PhaseI_2021.pdf
5. Great Lakes Connection, April 14, 2020. IJC Project Aims to Create Fish Consumption Resource for Indigenous Anglers. https://ijc.org/en/ijc-project-aims-create-fish-consumption-resource-indigenous-anglers
6. International Joint Commission (2020). Second Triennial Assessment of Progress Report on Great Lakes Water Quality, 2020. https://www.ijc.org/en/2020-TAP-Report
7. IJC Health Professionals Advisory Board (2020). A Review of the Human Health Impacts of Selenium in Aquatic Systems. https://www.ijc.org/sites/default/files/2020-09/HPAB_SeleniumHealthReview_2020.pdf
8. IJC Health Professionals Advisory Board (2017) Human Health Effects of Cyanobacterial Toxins in the Great Lakes Region: A Science and Monitoring Assessment. https://www.ijc.org/sites/default/files/2019-04/HPABAlgalBloomFinal.pdf

SHELBY BRUNNER, Ph.D.
Science and Observations Manager
Great Lakes Observing System
906-440-0224
shelby@glos.org

Education

Ph.D. Freshwater Sciences University of Wisconsin-Milwaukee *Fall 2016* Dissertation: *A multi-faceted biogeochemical approach to analyzing hypoxia in Green Bay, Lake Michigan*

B.S. Environmental Chemistry, *magna cum laude* Lake Superior State University *May 2011* Senior Thesis: *A Pilot Study to Determine an Effective Technology to Remove Geosmin and 2- Methylisoborneol for the City of Fairmont*

Professional Experience

2024-Pres.	Science and Observing Manager, Great Lakes Observing System, Ann Arbor, MI
2020-2023	Observing Technology Manager, Great Lakes Observing System, Ann Arbor, MI
2018-2020	Program Specialist, Global Ocean Monitoring and Observing Program, NOAA/UCAR, Silver Spring, MD
2017-2018	Knauss Fellow, Global Ocean Monitoring and Observing Program, NOAA, Silver Spring, MD
2011-2017	Graduate Research Assistant, School of Freshwater Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI
2010	Hollings Scholar, Atlantic Oceanographic and Meteorological Lab, NOAA, Miami, FL
2009-2011	Environmental Lab Technician, Lake Superior State University, Sault Ste. Marie, MI
2009-2011	Tutor and Group Instructor, Learning Center, Lake Superior State University, Sault Ste Marie, MI
2008	Harbor Attendant, MI Dept. of Natural Resources, Port Austin, MI

Selected Fellowships and Awards

- Sea Grant John A. Knauss Marine Science-Policy Fellowship, 2017
- Cooperative Institute for Limnology and Ecosystems Research (CILER) Graduate Fellowship, 2015-16
- UWM Distinguished Dissertator Graduate School Fellowship, 2014-15
- UWM Distinguished Graduate School Fellowship, 2013-14
- UNOLS Early Career Chief Scientist Training Program Participant, November 2012
- Oceans and Human Health NOAA Fellowship, 2011-2012
- Ernest F. Hollings NOAA Scholarship, 2009-11

Field Experience

R/V Neeskay, University of Wisconsin-Milwaukee, Milwaukee, WI — Several

- Deploy, maintain, and calibrate several seasonal water quality/sonde stations in Green Bay
- Perform a variety of sediment core experiments, including oxygen incubations and porewater extractions
- Assist in adaptation of eddy correlation benthic system to Great Lakes environment

R/V Oceanus, Oregon State University, Newport, Oregon — July 2013

- Deploy eddy correlation and microelectrode profiler landers to study sediment-water processes of coastal Pacific sediments
- Perform mircoelectrode preparation, maintenance, and calibration
- Assist with multicorer and CTD deployments/recovery, provide other help as needed

R/V New Horizon, Scripps Institution of Oceanography, San Diego, California November 2012

- Design research plan for 7-day cruise and coordinate efforts with 12 scientists across U.S.
- Attend 2-day UNOLS workshop on chief scientist preparations and execute cruise plan including mobilization, sample collection and demobilization, assist with a variety of research tasks

R/V Ronald H. Brown, National Oceanic and Atmospheric Administration (NOAA) July-August 2011

- Operate underway-CTD (uCTD), CTD and XBT, collect CTD samples for oxygen and salinity
- Assist in repairs of scientific equipment including uCTD, CTD, and XBT
- Assist in ozone sonde launches, provide other meteorological experiment help as needed

Publications

Brunner, S. L., Grunert, B., Weckerly, K., Anderson, P., and Klump, J. V. *In review*. Limnology and Oceanography. *A whole ecosystem perspective of hypoxia and its drivers in a large temperate estuary.*

Brunner, S. B., Dorton, J., Chardon-Maldonada, P., Farrugia, T. J., Ford, M. Y., et al. 2025. OCEANS 2025 - Great Lakes, Chicago, IL, USA. *The ongoing evolution of ocean observing: Aligning with regional priorities.* doi: 10.23919/OCEANS59106.2025.11245150

Yeo, A., Henderson, H., Anderson, E. J., Fiorentino, L. A., Brunner, S. 2025. IEEE. *Building capacity to measure and assess offshore, full-frequency water level fluctuations to support coastal hazard observation and prediction.* doi: 10.23919/OCEANS59106.2025.11245121

Smith, N. S., Kessler, W.S., Cravatte, S., …. Brunner, S.L. 2019. Frontiers in Marine Science. *Tropical Pacific Observing System*. doi:10.3389/fmars.2019.00031

Klump, J. V., Brunner, S. L., Grunert, B. K., Kaster, J. L., et al. 2018. J. Great Lakes Res. *Evidence of persistent, recurring summertime hypoxia in Green Bay, Lake Michigan.* doi: 0.1016/j.jglr.2018.08.002

Bartlett, S. L., Brunner, S. L., Klump, J. V., Houghton, E. M., and Miller, T. R. 2018. J. Great Lakes Res. *Spatial analysis of toxic or otherwise bioactive cyanobacterial peptides in Green Bay.*

LaBuhn, S. and Klump. J.V. 2016. J. Great Lakes Res. *Estimating summertime primary production via in-situ monitoring in an eutrophic freshwater embayment, Green Bay, Lake Michigan.*

Selected Presentations

Brunner, S., Henderson, H., Johnson, K., Klump, J., Miller, R., and Zorn, M. 2026. *Twenty+ years of (un)intentional Great Lakes observing co-design.* AGU Ocean Sciences Meeting. Glasgow, Scotland.

Brunner, S., Klump, J., Bootsma, H., and Grow, J. 2025. *Primary production rates across Lake Michigan*. International Association for Great Lakes Research. Milwaukee, WI.

Brunner, S., Anderson, E., Wu, C., Henderson, H., Anderson, J., and Meadows, G. 2025. *Building capacity to support coastal hazard observation and prediction.* International Association for Great Lakes Research. Milwaukee, WI.

Brunner, S., et al. 2019. *The Tropical Pacific Observing System and 2020. Lightning talk.* Ocean Obs ’19.

Brunner, S., Klump, V. 2017. *Understanding the balance of oxygen consumption in Green Bay, Lake Michigan.* State of Lake Michigan. Green Bay, WI.

Brunner, S., Smith, E., Thurston, S., Todd, J., Piotrowicz, S., Tedesco, K., and Legler, D. 2017. *Sustained ocean observations to understand climate: A look at NOAA’s Ocean Observing and Monitoring Division.* JCOMM-5 Technical Conference. Geneva, Switzerland.

LaBuhn, S. and Klump, V. 2017. The biogeochemistry of dissolved oxygen in Green Bay, Lake Michigan. Great Lakes Environmental Research Lab. *Invited seminar.* Ann Arbor, MI.

Connor Lauren Brooks

608.290.3217 | clbrooks2720@gmail.com

Education

UNIVERSITY OF WISCONSIN-MADISON *2018 - 2023*
B.S, Atmospheric & Oceanic Sciences *with Honors in the Major*, International Studies

Research Experience

NELSON INSTITUTE, CENTER FOR CLIMATIC RESEARCH, UW-MADISON
Undergraduate Research Assistant, PI: Dr. Hannah Zanowski *Jan 2021 – Aug 2023*

- Acquired, processed, and analyzed data from global coupled climate models using Python to investigate ocean and atmospheric circulation around Greenland in future warming scenarios.
- Created a poster and presented research at several UW functions to various audiences.
- Summarized and wrote up findings to submit an Honors Thesis and for eventual publication.

GULF OF MAINE RESEARCH INSTITUTE, PORTLAND, ME
Undergraduate Research Fellow, PI: Dr. Hannah Baranes *Summer 2022*

- Used GIS data and field measurements to conduct a sea level rise vulnerability assessment for a portion of Portland's working waterfront using uniquely calculated local sea level rise projections and site-specific infrastructure concerns.

Work Experience

GREAT LAKES OBSERVING SYSTEM, ANN ARBOR, MI
Observing Data Specialist *Nov 2025 - present*

- Maintain IOOS-compliant data infrastructure by leading platform onboarding, metadata management, partner communication, and periodic records review for the Seagull repository and dashboard
- Produce and present observing network communications across newsletters and regional/national conferences
- Conduct beta and user testing on GLOS products, identifying actionable recommendations aligned with data management best practices

GULF OF MAINE RESEARCH INSTITUTE, PORTLAND, ME
Coastal Hazards Research Technician *Sep 2023 – Aug 2024*

- Led the development of a working waterfront risk analysis tool that guides adaptation decisions under various sea level rise projections.
- Co-led field campaigns to install tide gauges and conduct GNSS surveying under guided protocols with a high degree of accuracy while also supporting community science and education projects centered on interpreting and using the generated tidal data.
- Interviewed stakeholders, conducted vulnerability assessments, and created GIS flood inundation maps to support Maine's working waterfront in preparing for sea level rise.

Updated March 2026

AMERICAN INSTITUTE OF PAKISTAN STUDIES, MADISON, WI
Programming Assistant *Feb 2019 – May 2023*

- Database management, including member profiles and fellowship applications.
- Updated and maintained website to provide a clear and organized space for sharing news and events related to the non-profit and its members.
- Collaboratively wrote grants and reports to secure funding for future programming.

Professional Involvement

- American Meteorological Society, UW-Madison Chapter | *2021 – 2023*
- Geological Society of America | 2024 - *present*
- Phi Beta Kappa, Member | *2020 – present*
- Marine Technology Society | 2026 - *present*

Skills

- Computer: Python, R, Gempak, QGIS, SQL, AWS
- Grant technical writing, public communication
- First Aid/CPR certified (2024), Safety at Sea certification
- Conversationally fluent in French

Updated March 2026

(734) 972-8096 **Joeseph P. Smith** jpTheSmithe@gmail.com

Experience

Cyberinfrastructure Engineer - Great Lakes Observing System
Ann Arbor, MI, May 2021 - present - about 5 years

- Worked with organization partners on long-term procedures (NDBC and NCEI)
- Producing high level documentation for critical operational certification and overall operations
- Re-engineered caching for data endpoints of interest for speed
- Assembled and successfully demonstrated an application for key partner
- Maintaining operations during the organization's migration to cloud computing
- Providing technical guidance for the organization's project portfolio
- Worked with development partners through scrum sprints to improve products
- AWS, Terraform, Kubernetes, Pythonic Docker, R, Shell, SQL (PostgreSQL, RedShift), JavaScript

General Programmer/Analyst - Cooperative Institute for Great Lakes Research (CIGLR)
Ann Arbor, MI, January 2012 - April 2021

- Developed, maintained over *10* data driven web pages for projects being performed by NOAA-GLERL in partnership with CIGLR, effectively communicating scientific observations
- Produced plots and tables of processed data which supported over *20* publications, presentations, and scientific posters (average about *2-3 per year*)
- Slurm, Python, R, Shell, SQL, JavaScript, PHP, FORTRAN, WordPress, Drupal
- ORCID: 0000-0002-1896-1390, CIGLR Profile

Skills

- LLM Software development with GitHub Co-Pilot and Claude Code
- Document drafting with Google Gemini followed up with manual review, editing
- Kubernetes administration - pod management, logging, exec, cluster upgrades
- Terraform infrastructure as code
- AWS Codebuild, deployment connected to GitHub/Git
- Full-stack web development: JavaScript, PHP, composer, BASH, PostgreSQL
- REST(ful) APIs and database ORMs - Django
- Big data ETL (Extract, Transform, Load) - R, Python, FORTRAN

Community

Sheffield Square I Condominium Association Board - President 2021 - Present
City of Saline - Parks Commissioner since 2023, Chair since 2025

Education

B.S. - 2012 - University of Michigan, Ann Arbor, MI - Data Science

MICHAEL G. SUTHERLAND

EDUCATION
Master of Science, Environmental Studies; 2010
College of Charleston, Charleston, SC

Bachelor of Arts, Political Science; Minor, Environmental Studies; 2005
University of Florida, Gainesville, FL

Additional graduate level coursework in remote sensing, geomatics, geospatial programming, and data analytics taken at the University of Colorado (Boulder and Denver campuses) and Pennsylvania State University between 2011 and 2020.

PROFESSIONAL EXPERIENCE
Great Lakes Observing System, Ann Arbor, MI
Marine Geospatial Analyst; April 2024-Present

- Technical subject matter expert supporting GLOS bathymetric mapping programs and projects (e.g. crowd-sourced bathymetry, Lakebed2030, etc.)
- Support GLOS communications team via development of geospatial visualizations
- Provide operational support to GLOS DMAC team regarding geospatial data processing, visualization and data management of observational assets

Cooperative Institute for Research in Environmental Sciences (CIRES),
National Snow and Ice Data Center, Boulder, CO
Associate Scientist III; May 2022-April 2024

- Data Management Team Lead at the NASA Distributed Active Archive Center (DAAC)
- Coordinated day to day activities of a matrixed data management team supporting the NASA SMAP satellite mission and cryospheric data products
- Developed and achieved data management goals and deliverables through coordination with internal and external stakeholders
- Ensured data products were ingested, archived, and distributed according to NASA and NSIDC DAAC requirements
- Ensured data and supporting metadata and documentation conform to NASA and NSIDC DAAC data standards and best practices (i.e. FAIR data principles)
- Provided on-site data management support during the 2023 NASA SnowEx Campaign (Fairbanks, AK)

Dewberry, Denver, CO
Senior Geospatial Analyst; May 2019-April 2022

- Technical subject matter expert supporting airborne lidar bathymetry acquisition projects for federal partners (NOAA, USGS, USACE)

- Led topo-bathymetric lidar data preparation team responsible for exploratory data analysis and initial processing of acquired lidar data
- Developed operational decision support tools for topo-bathymetric lidar projects to ensure optimal data acquisition conditions
- Responsible for quality control review on acquired raw data to determine adequacy for subsequent production processing
- Conceived and developed new and improved data processing workflows/tools to improve processing efficiency
- Performed final quality control review on client deliverables to ensure contract compliance

Cooperative Institute for Research in Environmental Sciences (CIRES),
NOAA National Centers for Environmental Information (NCEI), Boulder, CO
Associate Scientist II/III; October 2012–April 2019

- Technical task lead for coastal digital elevation model (DEM) development projects at NOAA NCEI
- Helped design and implement an improved framework for the creation of coastal DEMs on a national scale (e.g. CUDEM Program)
- Developed and improved open-source data processing workflows to enable automated DEM development and facilitate continuous data updates to support NOAA mission critical activities (operational hydrodynamic modeling, hazards mapping)
- Represented NOAA NCEI in various inter- and intra-agency coastal mapping working groups to establish elevation data processing best practices, facilitate data sharing and avoid duplication of effort
- Coordinated the transfer of coastal lidar data from federal providers to NOAA NCEI's long term data repository
- Validated and packaged received data for long term archive
- Created and improved data documentation (i.e. standards-compliant metadata)

I.M. Systems Group (contracted to the NOAA Coastal Services Center), Charleston, SC Geospatial Analyst; January 2010-August 2012

- Technical staff member supporting various elevation mapping and coastal hazards related projects
- Created lidar-derived coastal DEMs in support of the NOAA Sea Level Rise Viewer web mapping application
- Processed airborne lidar data for public dissemination via the NOAA Digital Coast Data Access Viewer
- Helped develop and implement raster modeling workflows to depict various inundation scenarios for the NOAA Sea Level Rise Viewer web mapping application
- Performed quality control of subcontracted lidar data and associated DEMs
- Participated in multiple GNSS field surveys to support accuracy assessment of contracted lidar acquisitions

TECHNICAL SKILLS

Operating Systems: Windows, Linux
Programming/Scripting Languages: Python, bash
Geospatial Software: Python Geospatial Stack (e.g. GDAL, geopandas, rasterio), ArcGIS Pro, QGIS, Global Mapper, Generic Mapping Tools (GMT)
Elevation Mapping Software: LAStools, LP360, PDAL, MB-System, Terrascan, Qimera, Fledermaus

HONORS AND AWARDS

Dewberry At Work Award (Peer Recognition), Dewberry, October 2021
Silver Medal for Meritorious Service to Science in support of Advances in Coastal Digital Elevation Model Development, CIRES/CU-Boulder, July 2020
Outstanding Achievement Award in support of Coastal Elevation/Inundation projects, NOAA Coastal Services Center, November 2011
Outstanding Achievement Award in support of Marine Spatial Planning and Coastal Elevation/Inundation projects, NOAA Coastal Services Center, December 2010

PUBLICATIONS

Amante, C.J., Love M, Carignan K, Sutherland MG, MacFerrin M, Lim E. Continuously Updated Digital Elevation Models (CUDEMs) to Support Coastal Inundation Modeling. Remote Sensing. 2023; 15(6):1702. https://doi.org/10.3390/rs15061702

Westington, M., Varner, J., Johnson, P., Sutherland, M., Armstrong, A., and Jencks, J. 2019. Assessing Gaps via Bathymetric Sounding Density. The International Hydrographic Review, 20, 41-44.

Sutherland, M.G., Amante, C.J., Carignan, K. and Love, M. 2019. NCEI Continuously Updated Digital Elevation Models. Coastal Geotools Conference, February 11-14, Myrtle Beach, SC.

Sutherland, M.G., Amante, C.J. and Stroker, K. 2017.Towards an Accurate and Consistent National Coastal Digital Elevation Dataset. Coastal Geotools Conference, February 6-9, Charleston, SC.

Sutherland, M.G., McLean, S.J., Eakins, B., Beasley, L. and Love, M. 2015. High-Resolution Modeling of Coastal Elevations along Hurricane Sandy-Impacted Coasts: New Methods and Early Results. Coastal Geotools Conference, March 30-April 2, Charleston, SC.

Eakins, B.W., Danielson, J.J., Sutherland, M.G. and McLean, S.J. 2015. A Framework for a Seamless Depiction of Merged Bathymetry and Topography along U.S. Coasts. Proceedings of U.S. Hydro, March 16-19, National Harbor, MD.

Love, M.R., Sutherland, M.G., Eakins, B., Marcy, D. and McLean, S. 2013. Development of High Resolution, Lidar-Derived Digital Elevation Models for the U.S. Great Lakes. Geological Society of America, Abstracts with Programs, 45(7), 755.

Eakins, B.W., Danielson, J., Sutherland, M.G. and McLean, S. 2013. Creating a Framework for Integrated U.S. Digital Elevation Models. Geological Society of America, Abstracts with Programs, 45(7), 649.

Marcy, D., Brooks, W., Draganov, K., Hadley, B., Haynes, C., Herold, N., McCombs, J., Pendleton, M., Ryan, S., Schmid, K., Sutherland, M. and Waters, K. 2011. New Mapping Tool and Techniques for Visualizing Sea Level Rise and Coastal Flooding Impacts. Solutions for Coastal Disasters 2011, American Society of Civil Engineers, pp. 474-490. https://doi.org/10.1061/41185(417)42

Sutherland, M.G. and Sautter, L.R. 2010. Monitoring of a Discrete Shoal Bypassing Event and Resultant Effects upon Beach Morphology, Dewees Island, SC. Geological Society of America, Abstracts with Programs, 42(1), 94.

Levine, N.S., Kaufman, C.C., Sutherland, M. and Renaud, L. 2008. Adapting HAZUS-MH to Assess Sea Level Rise. Geological Society of America, Abstracts with Programs, 40(6), 84.

Kathryn Rousseau

katie@glos.org

20 YEARS OF EXPERIENCE SPECIALIZING IN DEVELOPING AND EXECUTING PROGRAMS IN THE GREAT LAKES REGION

Dedicated, resourceful and organized professional building and fostering relationships with a diverse set of partners to advance science, policy and management in the Great Lakes region.

SKILLS

Internal and external collaboration
Leadership
Strategic planning
Facilitation and conflict management
Listening and relationship building
Attention to detail
Contract oversight and management
Grant and report writing
Budget development and management
Event and meeting planning
Virtual communication skills
Microsoft 365
Google Workspace
Salesforce and Leadership Connect

PROFESSIONAL EXPERIENCE

Strategic Initiatives Manager, Great Lakes Observing System, Ann Arbor, Michigan. January 2024 – Present.

- Provided internal coordination and communication to draft language for the Great Lakes Mapping Act introduced by Representatives Lisa McClain (MI-9) and Debbie Dingell (MI-6) in January 2024. The bill was reintroduced in April 2025. Supported testimony development that was presented before the House Natural Resources Subcommittee on Water, Wildlife and Fisheries.
- Supported fundraising strategies for individuals through online giving and at events.
- Served as point person for new opportunities, initiatives and projects.
- Developed and managed the communications department's budget.

Smart Great Lakes Liaison, Great Lakes Observing System, Ann Arbor, Michigan. July 2019 – January 2024.

- Coordinated with over seventy binational Great Lakes science, data and policy experts to write the *Common Strategy for Smart Great Lakes*.
- Managed GLOS funding support to develop the Indigenous Great Lakes Network Initiative.
- Communicated to Congress both national and regional observation and data priorities through the Appropriations process as well as ongoing education and advocacy.
- Provided leadership to the Integrated Ocean Observing System's Diversity, Equity, Inclusion, and Accessibility Committee.
- Managed communications and program related projects.

Director, Clean Water Supply Program, Great Lakes, American Rivers, Waterville, Ohio. January 2014 – June 2019.

- Supervision and management of three remote employees in the Great Lakes region.
- Advanced Integrated Water Management and green stormwater infrastructure initiatives in multiple cities across the Great Lakes region through partnerships, community engagement, policy modifications, and on-the-ground implementation of projects.

- Developed and coordinated the Great Lakes Community Partners community of practice, which also served as a One Water Summit delegation. Provided subgrants to partners to support common mission goals and objectives.
- Served as Healing Our Waters Great Lakes Coalition Co-Chair during the implementation of the Equity, Advisory and Action committee as well as the hiring of the present Coalition Director.
- Coproduced the 2019 report *Protecting Drinking Water in the Great Lakes: A Primer on Existing State Policies and Using the Safe Drinking Water Act* with the Great Lakes Environmental Law Center.
- Led strategic planning efforts in the Great Lakes for American Rivers.
- Built and maintained relationships with Great Lakes funders.
- Spokesperson and representative of American Rivers at conferences, workshops, and meetings.

Associate Director, American Rivers, Toledo, Ohio. July 2010 – December 2013.

- Worked with environmental nonprofit partners in Ohio and Michigan to revise state stormwater policies including State Revolving Loan funds.
- Code and Master Plan review project with Trout Unlimited.
- Hosted and organized several local workshops. Tasks included agenda development, speaker invitations, coordinating materials for handouts, and overall logistics.

Conservation Associate, American Rivers, Toledo, Ohio. September 2007 – June 2010.

- Worked with a Toledo City Councilman to remove policy barriers and write ordinance language to utilize green stormwater infrastructure practices in the City of Toledo.
- Provided leadership to the Rain Garden Initiative of Toledo – Lucas County.

EDUCATION:

Master of Arts in Geography, May 2007. University of Toledo, Toledo, Ohio. Research focus: Watershed Management, Land Use Planning, Geographic Information Systems.

Bachelor of Science in Education, June 2002. Ohio University, Athens, Ohio. Secondary Education with an Earth/Space Science Area of Concentration.

CERTIFICATIONS AND TRAINING:

- 4 Seasons of Indigenous Learning Certificate (2025)
- NOAA's Facilitation Basics for Coastal Managers training (2023)
- Race Forward's Building Racial Equity training
- Institute for Conservation Leadership training – Leading from Within (2013/2014)
- Geographic Information Sciences and Applied Geographics Certification (2007)

COMMUNITY SERVICE:

Advisory Board, (2022 – present) University of Toledo's Geography and Planning Department.
Trustee, (2011 – 2019) Black Swamp Conservancy. Executive committee 2013 - 2017.
Board member, (2015 – 2017) Ohio Stormwater Association.
Volunteer, (2004 – 2012) Junior League of Toledo. Various placements including Vice President of Community Projects on the Board of Directors.

Samuel W. Johnson

Ann Arbor, MI, 48103 | 608-482-3972 | sam@glos.org

Education

MASTER OF ARTS | JANUARY 2023 | DEPAUL UNIVERSITY

· Master of International Studies: with emphasis on international law and energy equity
· A rigorous program involving in-depth analysis of critical economic, social, and political theory
· My master's thesis research focused on social apparatuses and legal structures surrounding oil pipelines and the politics of energy in the Great Lakes region

BACHELOR OF ARTS | MAY 2016 | UNIVERSITY OF WISCONSIN-MADISON

· Double Major in German and International Studies
· Achieved a GPA of 3.4/4.0 in four years while consistently working parttime and taking on an immersive yearlong study abroad program in Germany

Work Experience

COMMUNICATIONS SPECIALIST | GREAT LAKES OBSERVING SYSTEM (GLOS) | NOVEMBER 1, 2023 - PRESENT

· Coordinated and streamlined inter-organization and external communications via multiple digital platforms
· Curated outward facing communications and partner relations by managing all GLOS's social media accounts, CRM and project tracking accounts, and website development and maintenance
· Created original graphic design content and captured original photography and video for multiple uses that included social media, physical flyers and brochures, video productions, and web ads
· Managed email responses and outreach campaigns that included regular, scheduled newsletters and targeted updates for multiple email groups consisting of varying audiences
· Established and maintained lines of communications with regional businesses, organizations, academic bodies, local and state government, regional journalists and members of the media
· Initiated external projects and planned subsequent individual and group events and travel
· Led marketing and outreach projects and meeting with various groups to create informational products to address multiple organizational needs, e.g. Lakebed 2030
· Initiated and managed the organizations donations-receiving/tracking and response processes

CREW MEMBER | TRADER JOE'S | SEPTEMBER 2019 - October 2023

· Transported, organized, and merchandized mass amounts of produce and grocery product
· Acted as the Flower/Plant section lead, overseeing the writing of the daily order and marketing of the product
· Operated cash registers and addressed customer questions and concerns

STUDENT MARKETING COORDINATOR | INTERNATIONAL ACADEMIC PROGRAMS | SEPTEMBER 2015- MAY 2016

· Regularly conducted informational presentations to university classes
· Designed and sent out mass emails promoting study abroad programs
· Worked with other team members to organize promotional materials and informational events
· As a team, achieved record high program exposure numbers

Samuel W. Johnson

Ann Arbor, MI, 48103 | 608-482-3972 | sam@glos.org

Skills

LEADERSHIP

· One of my many roles at Bassett Street Brunch Club was as a shift manager. I independently oversaw the staff and operations of the restaurant during weekday morning and weekend night shifts. During that time, I was responsible for the restaurant finances and for managing the front- and back-of-house employees. Most recently, I have taken on project management roles on many long term, team initiatives that involved managing members of the organization's team within the context of the project structure.

COMMUNICATION

· My many different roles in many different disciplines have required me to be well versed in all different types of communication. My customer service jobs have given me extensive experience in one-on-one customer relations, challenging me to problem-solve and address immediate concerns. My time in academia honed my ability to communicate amongst peers, with professors, and to larger, unknown audiences. In my role as the Communication Specialist, I have been responsible for the organization of internal communications and the overall strategy and enactment of external communications, outreach, and media relations including educational, government, and industry interaction. This communication on every level has required expertise in every medium: writing copy; creating original, informational visual aides; and producing photography and film to convey projects' progress and success.

MEDIA AND PHOTOGRAPHY

· I have proficient experience and ever-evolving skills in graphic design and social media. Having been responsible for the web presence and social media activity of GLOS, I regularly created original digital design and created and organized branding programs. The social media responsibility led to increased experience in video editing and sound design through new roles, such as producer for the informational livestream productions. As a longtime hobby-photographer, I have segued my skills into being the primary photographer and videographer for most GLOS-produced media.

RESEARCH AND WRITING

· Throughout my academic career, I have completed many comprehensive independent research projects. Having double-majored for my bachelor's degree at UW-Madison, I took on two separate capstone projects, one of which was researched and written fully in German. Furthermore, at the beginning of my graduate program at DePaul University, I made the choice to write a master's thesis. This challenged me to write many independent-research term papers in addition to and in preparation for the distillation of my self-prompted thesis. My thesis, on the Socio-material construction of oil pipelines, led me to implement many different types of research methods. These included, but were not limited to, fieldwork, interviews, and local, short-term ethnography.

Community Involvement

- Youth Education Volunteer | Huron River Watershed Council | April 2025 - Present

- Volunteer Canoe Guide | Friends of the Chicago River | June 2023 - March 2023

Cassondra Jones
(586) 876-3407 | cassondrajones403@gmail.com | linkedin.com/in/cassondrajones | Florida, USA

Professional Summary

Grants and program manager with experience overseeing federal and private funding, including budgets, subawards, contracts, and compliance reporting. Skilled in managing the full lifecycle of grants and agreements, supporting audit readiness, and improving internal workflows. Experienced in cross-functional collaboration with leadership, finance teams, and external partners to ensure effective program execution and compliance.

Professional Experience

Great Lakes Observing System (GLOS) | Ann Arbor, MI (Remote)
Grants Manager | Sept 2025 – Present
Grant Management Specialist (Contract) | Mar 2025 – Aug 2025

- Manage the full lifecycle of federal grants and agreements, including subawards, contracts, amendments, and no-cost extensions.
- Coordinate with leadership, finance, and project teams to support budgets, tracking, and deliverables.
- Maintain contract tracking systems and organized documentation to support audit readiness and reporting.
- Support subrecipient and contractor management, including invoice tracking and compliance documentation.
- Contribute to process improvements to strengthen internal workflows and reporting accuracy.

AARP, Livable Communities | Alexandria, VA (Remote)
Program Manager (Contract) | Feb 2024 – Dec 2024

- Managed a $3.8M national grant program, overseeing operations and grantee performance.
- Developed and implemented an on-demand grant initiative to expand funding accessibility.
- Prepared reports and funding recommendations to support executive decision-making.

GrantWorks | Austin, TX (Remote)
Grant Manager (Contract) | June 2022 – Sept 2023

- Managed $11.6M+ in federal grant funding, ensuring compliance with program requirements.
- Provided training and technical assistance to grantees to improve performance and reporting.
- Streamlined internal processes to improve grant administration and reporting efficiency.

BluBinder | Falls Church, VA (Remote)
Grant & Outreach Manager (Contract) | June 2022 – Sept 2022

- Developed grant tracking systems and supported proposal development for private funding.

United Way for Southeastern Michigan | Detroit, MI
Health & Basic Needs Project Manager | July 2020 – June 2022
Health & Basic Needs Specialist | May 2019 – June 2020
Early Childhood Specialist | Apr 2018 – May 2019

- Managed $12M+ in federal funding (including FEMA EFSP), ensuring compliance across the grant lifecycle.
- Served as liaison between federal agencies, subrecipients, and internal teams.
- Led improvements to grant systems, reporting processes, and documentation practices.
- Supported administration of additional federal and community-based grant programs.

Education

Master of Social Work (MSW), Clinical
Michigan State University | East Lansing, MI
Certificate: Social Work in Health Care | GPA: 4.0 | Phi Alpha Honors Society

Bachelor of Arts, Human Development
Michigan State University | East Lansing, MI
Minors: Sociology; Women & Gender Studies

Technical Skills

- **Grant & Contract Management:** Subawards, procurement contracts, compliance, reporting
- **Systems:** Salesforce, eRA Commons, SurveyMonkey Apply, OpenWater
- **Financial Tools:** Excel, Bill.com, budget tracking and reconciliation
- **Other:** Microsoft Office, Google Workspace

DAVID M. O'DONNELL
Upstate Freshwater Institute
Midler Park Drive, Syracuse, NY 13206
Phone: (315) 431-4962 (x119) Fax: (315) 431-4969
E-mail: daveod@upstatefreshwater.org

Education:

M.S. Mechanical Engineering, Michigan Technological University, 1987
B.S. Mechanical Engineering, Michigan Technological University, 1985

Professional Appointments:

2003 – present Senior Research Engineer, Upstate Freshwater Institute, Syracuse, NY
1996 – 2003 Engineer, Innovative Engineering and Technology, Syracuse, NY
1987 – 1995 Staff Scientist, Science Applications International Corp, San Diego, CA

Professional Background:

- Monitoring systems design and application
  - over 20 years of experience with autonomous monitoring systems
    - configured and deployed over 20 autonomous buoys and creek side sampling stations that measure meteorological and water quality parameters
    - implemented real-time data processing including automated QA/QC, and data post-processing to produce website graphics (plots)
    - provided real-time data to project stakeholders and the GLOS network
    - successfully designed/deployed a NRT overwinter platform in Lake Ontario
    - designed three overwinter monitoring systems that have been deployed in New York City drinking water reservoirs for the past seven years
  - developed and deployed flow-through tributary sampling systems
  - developed shipboard optical water quality monitoring systems
    - flow-through sampling system
    - autonomous remote sensing reflectance platform
    - systems have been deployed on EPA's Great Lake research vessel
  - skilled with Campbell Scientific data loggers and Arduino microcontrollers
- Software development
  - skilled in Java, Fortran, CRBasic, and C/C++
  - developed post-processing software for remotely collected data
  - developed data management application for laboratory and field data
- Mathematical modeling
  - conducted modeling analysis on several New York City water supply reservoirs and three of New York's Finger Lakes
  - code modifications to CE-QUAL-W2 (a 2-D hydrodynamic and water quality model), including the addition of a mussel (zebra/quagga) sub-model
- extensive research in remote sensing and optical water quality

Selected Peer-Reviewed Publications (11 of 39)

Huang, C., A. Kuczynski, M. T. Auer, **D M. O'Donnell** and P. Xue. 2019. Management Transition to the Great Lakes Nearshore: Insights from Hydrodynamic Modeling. Journal of Marine Science and Engineering, 7(5), 129

O'Donnell, D. M. and S. W. Effler. 2006. Resolution of impacts of runoff events on a water supply reservoir with a robotic monitoring network. Journal of the American Water Resources Association 42(2):323-335.

O'Donnell, D. M., S. W. Effler, C. M. Strait, F. Peng and M. G. Perkins. 2013. Remote sensing reflectance in the Great Lakes: In situ measurements, closure analyses, and a forward model. Journal of Great Lakes Research 39(Supplement 1):137-150.

Effler, S. W., **D. M. O'Donnell**, A. R. Prestigiacomo, D. C. Pierson, M. S. Zion, G. W. Pyke and W. J. Weiss. 2014. Robotic monitoring for turbidity management in a multiple reservoir water supply. Journal of Water Resources Planning and Management 140(7):04014007

Pierson, D. C., R. K. Gelda, S. W. Effler, **D. M. O'Donnell** and A. R. Prestigiacomo. 2008. Use of automated monitoring to estimate the load of turbidity entering a drinking water reservoir. Verh. Internat. Verein. Limnol. 30(Part 1):113-116.

Prestigiacomo, A. R., S. W. Effler, **D. M. O'Donnell**, D. G. Smith and D. Pierson. 2008. Turbidity and temperature patterns in a reservoir and its primary tributary from robotic monitoring: Implications for managing the quality of withdrawals. Lake and Reservoir Management 24(3):231-243.

Denkenberger, J. S., C. T. Driscoll, S. W. Effler, **D. M. O'Donnell** and D. A. Matthews. 2007. Comparisons of an urban lake targeted for rehabilitation and a reference lake based on robotic monitoring. Lake and Reservoir Management 23:11-26.

Denkenberger, J. S., **D. M. O'Donnell**, C. T. Driscoll and S. W. Effler. 2007. Robotic monitoring to assess impacts of zebra mussels and assimilative capacity for a river. Journal of Environmental Engineering 133(5):498-506.

Effler, S. W., **D. M. O'Donnell**, F. Peng, A. R. Prestigiacomo, M. G. Perkins and C. T. Driscoll. 2006. Use of Robotic Monitoring to Assess Turbidity Patterns in Onondaga Lake, NY. Lake and Reservoir Management 22(3):199-212.

O'Donnell, D. M. and S. W. Effler. 2006 . Resolution of impacts of runoff events on a water supply reservoir with a robotic monitoring network. Journal of the American Water Resources Association 42(2):323-335.

Effler, S. W., **D. M. O'Donnell** and C. J. Owen. 2002. America's most polluted lake: Using robotic buoys to monitor the rehabilitation of Onondaga Lake. Journal of Urban Technology 9(2):21-44.

BRUCE A. WAGNER
Upstate Freshwater Institute
Midler Park Drive, Syracuse, NY 13206
Phone: (315) 431-4962 (x109) Fax: (315) 431-4969
E-mail: bawagner@upstatefreshwater.org

Education:

M.S.	Forest Biology, SUNY College of Environmental Science and Forestry, 1998
B.S.	Fish and Wildlife, SUNY College of Environmental Science and Forestry, 1983

Professional Appointments:

2007 – present	Senior Research Scientist, Upstate Freshwater Institute, Syracuse, NY
1987 – 2006	Research Scientist, Upstate Freshwater Institute, Syracuse, NY
1986	Polger Fellow, NYSDEC, Hudson River Foundation, NY
1985	Research Assistant, Institute of Ecosystem Studies, NY
1983 – 1984	Field Technician, SURCO, NY

Professional Background:

- Directed or conducted field programs on over 40 lakes and rivers in New York State. Experienced in using a wide array of field equipment and monitoring techniques including water quality profiling instrumentation, underwater optical instrumentation, sediment traps, stream flow measurements, diurnal sampling, and storm event monitoring. Process studies include productivity/respiration experiments, time of travel studies, sediment characterization/mapping, collection of sediment cores using gravity coring and box coring.

- Over 20 years of experience configuring, deploying, maintaining and retrieving real-time water quality monitoring buoys on the following systems:

    - Onondaga Lake (2000 – present) – one buoy at South Deep deployed April – November, annually

    - Three Rivers System (2000 – 2009); 10 buoys in Seneca, Oneida, Oswego Rivers

    - Finger Lakes (2002-2008); various buoy deployments on Otisco, Owasco, Skaneateles, Cayuga

    - New York City Reservoirs (2001 – 2014); 9 buoys in 5 reservoirs and 4 tributaries

    - involved in the design and construction of creek side flow-through monitoring systems that were deployed in the Onondaga L. and New York City drinking water reservoirs watersheds

    - Assisted in design, construction, configuration, deployment and successful retrieval of an under the ice buoy system for NYC Department of Environmental Protection (2014)

- Lake Ontario water quality buoys
    - in conjunction with SUNY-ESF and NYSDEC - Oak Orchard buoy, Sodus Point buoy (2018-2019); conduct pre-deployment setup and field maintenance
    - in conjunction with SUNY-ESF and GLOS - Oswego buoy (2019- 2021); conduct pre-deployment setup and field maintenance
- Well versed in all aspects of buoy construction, maintenance, floatation, towing, anchoring, and power systems.

Certifications:

- Open Water Certified Diver (Professional Association of Diving Instructors [PADI]) & Dry Suit and Computer Nitrox Certified Diver (SCUBA Diving International [SDI]) Open: 1983; Dry Suit/Nitrox: 2021
- Completion of United States Power Squadrons Boat Smart Course, Syracuse Sail & Power Squadron, March, 2011, 2020
- Completion of American Red Cross, Central New York Chapter, Standard First Aid and Adult CPR, February, 2012 – 2020 (renewed every two years).
- UFI Site Safety Officer (2015 - present); responsible for providing safe working conditions for UFI's field crew members, oversee field activities and equipment to verify field crew compliance with safety regulations, maintain field safety records including float plans and vessel safety checklists, perform safety audits and instruct field safety meetings/presentations

Research Interests:

Stream, lake, and reservoir water quality, the use of rapid profiling instrumentation to quantify patterns in lakes and reservoirs, and the automated monitoring of aquatic systems.

Selected Peer-Reviewed Publications (3 of 6)

Gelda, R. K., S. W. Effler, A. R. Prestigiacomo, F. Peng, A. J. P. Effler, **B. A. Wagner**, M. G. Perkins, D. M. O'Donnell, S. M. O'Donnell and D. C. Pierson. 2013. Characterizations and modeling of turbidity in a water supply reservoir following an extreme runoff event. Inland Waters 3(3): 377-390.

Effler, S. W., **B. A. Wagner**, D. M. O'Donnell, S. M. O'Donnell, D. A. Matthews, R. K. Gelda, C. M. Matthews and E. A. Cowen. 2004. An upwelling event at Onondaga Lake, NY: Characterization, impact and recurrence. Hydrobiologia 511:185-199.

Effler, S. W., M. G. Perkins, N. Ohrazda, C. M. Brooks, **B. A. Wagner**, D. L. Johnson, F. Peng and A. Bennett. 1998. Turbidity and particle signatures imparted by runoff events in Ashokan Reservoir, NY. Lake and Reservoir Management 14(2-3):254-265.

IDENTIFYING INFORMATION:

NAME: Mantha, Phanikumar S

POSITION TITLE: Professor

PRIMARY ORGANIZATION AND LOCATION: Michigan State University, East Lansing, Michigan, United States

Professional Preparation:

ORGANIZATION AND LOCATION	DEGREE (if applicable)	RECEIPT DATE	FIELD OF STUDY
Center for Math Modeling & Computer Simulation (C-MMACS), Bangalore, Not Applicable, N/A, India	N/A	05/1990 - 04/1993	Oceanography, Earth Sciences (Post-doctoral)
Indian Institute of Science, Bangalore, Not Applicable, N/A, India	PHD	08/1984 - 03/1990	Engineering
Andhra University, Waltair, Not Applicable, N/A, India	BENG	07/1980 - 06/1984	Mechanical Engineering

Appointments and Positions

2014 - present	Professor, Michigan State University, East Lansing, Michigan, United States
2024 - 2025	US Fulbright Scholar to India (Fulbright-Nehru Academic & Professional Excellence Award), National Institute of Technology, Calicut, Kerala, India
2017 - 2017	Distinguished Visiting Fellow, The Institute of Advanced Studies , University of Birmingham, Edgbaston, Birmingham, United Kingdom
2008 - 2014	Associate Professor, Michigan State University, East Lansing, Michigan, United States
2002 - 2008	Assistant Professor, Michigan State University, East Lansing, Michigan, United States
1999 - 2002	Visiting Assistant Professor, Michigan State University, East Lansing, Michigan, United States
1993 - 1996	Scientist, Center for Math Modeling & Computer Simulation (C-MMACS), Bangalore, Karnataka, India

Products

Products Most Closely Related to the Proposed Project

1. Safaie A, Weiskerger CJ, Nguyen TD, Acrey B, Zepp RG, Molina M, Cyterski M, Whelan G, Pachepsky YA, Phanikumar MS. Modeling the photoinactivation and transport of somatic and F-specific coliphages at a Great Lakes beach. J Environ Qual. 2020 Nov;49(6):1612-1623. PubMed Central PMCID: PMC7859910.
2. Zhang J, Qiu H, Li X, Niu J, Nevers MB, Hu X, Phanikumar MS. Real-Time Nowcasting of Microbiological Water Quality at Recreational Beaches: A Wavelet and Artificial Neural Network-Based Hybrid Modeling Approach. Environ Sci Technol. 2018 Aug 7;52(15):8446-

8455. PubMed PMID: 29957996.

3. Memari S, Anderson EJ, Phanikumar MS, Gronewold AD. Quantifying the Impact of Groundwater on Ice Formation in the Great Lakes. Water Resources Research. 2025 February 01; 61(2):e2025WR040581. Available from: https://doi.org/10.1029/2025WR040581
4. Safaie A, Weiskerger CJ, Nevers MB, Byappanahalli MN, Phanikumar MS. Evaluating the impacts of foreshore sand and birds on microbiological contamination at a freshwater beach. Water Res. 2021 Feb 15;190:116671. PubMed PMID: 33302038.
5. Shen C, Phanikumar MS, Fong TT, Aslam I, McElmurry SP, Molloy SL, Rose JB. Evaluating bacteriophage P22 as a tracer in a complex surface water system: the Grand River, Michigan. Environ Sci Technol. 2008 Apr 1;42(7):2426-31. PubMed PMID: 18504976.

Other Significant Products, Whether or Not Related to the Proposed Project

1. Safaie A, Wendzel A, Ge Z, Nevers MB, Whitman RL, Corsi SR, Phanikumar MS. Comparative Evaluation of Statistical and Mechanistic Models of Escherichia coli at Beaches in Southern Lake Michigan. Environ Sci Technol. 2016 Mar 1;50(5):2442-9. PubMed PMID: 26825142.
2. Shively DA, Nevers MB, Breitenbach C, Phanikumar MS, Przybyla-Kelly K, Spoljaric AM, Whitman RL. Prototypic automated continuous recreational water quality monitoring of nine Chicago beaches. J Environ Manage. 2016 Jan 15;166:285-93. PubMed PMID: 26517277.
3. Ge Z, Whitman RL, Nevers MB, Phanikumar MS. Wave-induced mass transport affects daily Escherichia coli fluctuations in nearshore water. Environ Sci Technol. 2012 Feb 21;46(4):2204-11. PubMed PMID: 22257076.
4. Thupaki P, Phanikumar MS, Beletsky D, Schwab DJ, Nevers MB, Whitman RL. Budget analysis of Escherichia coli at a Southern Lake Michigan Beach. Environ Sci Technol. 2010 Feb 1;44(3):1010-6. PubMed PMID: 20043679.
5. Liu L, Phanikumar MS, Molloy SL, Whitman RL, Shively DA, Nevers MB, Schwab DJ, Rose JB. Modeling the transport and inactivation of E. coli and enterococci in the near-shore region of Lake Michigan. Environ Sci Technol. 2006 Aug 15;40(16):5022-8. PubMed PMID: 16955902.

Synergistic Activities

1. As a former Lilly Teaching Fellow with interests in the pedagogy of teaching and learning, I am involved in bringing innovative methods of teaching and a focus on computational thinking to my classes. Developed computational models for use in the classroom and for research (e.g., FVCOM modules for fate and transport modeling of viruses, bacteria, nutrients and algal blooms in coastal environments).

Certification:

When the individual signs the certification on behalf of themselves, they are certifying that the information is current, accurate, and complete. This includes, but is not limited to, information related to domestic and foreign appointments and positions. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Mantha, Phanikumar S in SciENcv on 2026-03-19 15:21:19

CURRICULUM VITAE

Name:	Joan Bray Rose
Present Position:	Homer Nowlin Chair in Water Research Michigan State University College of Agriculture and Natural Resources Departments of Fisheries and Wildlife and Crops and Soil Sciences
Contact:	13 Natural Resources Building Michigan State University East Lansing, MI 48824 Phone: (517) 432-4412 Fax: (517) 432-1699 Email: rosejo@msu.edu
Date of Birth:	March 5, 1954
Citizenship:	U.S.A.
Education:	B.S. (Microbiology), University of Arizona, 1976. M.S. (Microbiology), University of Wyoming, 1980. Ph.D. (Microbiology), University of Arizona, 1985.

PROFESSIONAL EXPERIENCE

2023-present:	Director of the MSU Water Alliance
2003-present:	Homer Nowlin Endowed Chair for Water Research, Michigan State University
2005-present:	Co-Director, Center for Advancing Microbial Risk Assessment (CAMRA), Michigan State University (Center of Excellence DHS/EPA)
2005-2015:	Co-Director, Center for Water Sciences, Michigan State University
1998-2002:	Professor, College of Marine Science, University of South Florida
1994-1997:	Associate Professor, Department of Marine Science, University of South Florida
1995:	Courtesy Appointment, Associate Professor, Department of Civil and Environmental Engineering, University of South Florida
1989-1994:	Assistant Professor, Department of Environmental and Occupational Health, College of Public Health, University of South Florida
1986-1989:	Research Associate/Lecturer, Department of Microbiology and Immunology, and Nutrition and Food Science, University of Arizona

HONORS AND AWARDS

Awarded the " Guardian of the Environment" for outstanding lifetime of effort. At the Great Lakes Environmental Festival April 20th, 2024 Manistee, MI.

Winner of the International Water Association's *Global Water Award* 2024 for exceptional individuals who have changed industry norms to create lasting progress, recognizing leading water innovations driving impactful change and outstanding contributions toward a world in which water is wisely managed

Winner of the College of Agriculture and Natural Resources excellence in research for the Impact Award.2023, Michigan State University

Inducted into the Michigan Water Industry Hall of Fame. 2020

Awarded the 2016 Stockholm Water Prize, August 2016

Elected as a Distinguished Fellow, International Water Association, 2014.

Elected to the National Academy of Engineering, 2011

COMMITTEES

Chair of the International Joint Commission, Health Professionals Advisory Board 2023-2026,

Chair of the International Water Association Task Force on COVID-19, 2020

PUBLICATIONS (of 300 most relevant to beaches and water quality, *Rose laboratory)

1. Liu, L., Mantha, S.P., Molloy, S.L., Whitman, R.L., Shiverly, D.A., Nevers, M., Schwab, D.J. and Rose, J.B. 2006. Modeling the Transport and Inactivation of E. coli and Enterococci in the Near-Shore Region of Lake Michigan. Environ. Sci. and Tech. 40(16):5022-5028.
2. Ford, T.E., Colwell, R.R., Rose, J.B., Morse, S.S., Rogers, D.J, and Yates, T. L. 2009. Using Satellite Images of Environmental Changes to Predict Infectious Disease Outbreaks. Emerging and Infectious Dis. 15,(9):1341-1346.
3. Wong*, M., Kumar, L., Jenkins, T.M., Xagoraraki, I., Mantha, P.S. and Rose, J.B. 2009. Evaluation of Public Health Risks at Recreational Beaches in Lake Michigan via Detection of Enteric Viruses and a Human-Specific Bacteriological Marker. Water Research 43:1137-1149.
4. Verhougstraete*, M.P., Byappanahalli, M.N., Rose, J.B. and Whitman, R.L. 2010. Cladophora in the Great Lakes: Impacts on Beach Water Quality and Human Health. Water Sci & Tech. 62.1 p. 68-7.
5. Aslan* ,A. Xagoraraki, I.; Simmons, F.J.; Rose, J.B. and Dorevitch, S. 2011. Occurrence of Adenovirus and Other Enteric Viruses in Limited-Contact Freshwater Recreational Areas and Bathing Waters. J. Applied Microbiology 111:1250-1261.
6. Verhougstraete*, M.P., and Rose, J.B. 2014. Microbial Investigations of Water, Sediment, and Algal Mats in The Mixed Use Watershed of Saginaw Bay, Michigan. Journal of the Great Lakes Research. 40 (supp 1):75-82.
7. Verhougstraete*, M.P., Martin, S.L., Kendall, A.D., Hyndman, D.W. and Rose, J.B. 2015 Linking Fecal Bacteria in Rivers to Landscape, Geochemical, and Hydrologic Factors and Sources at The Basin Scale. Proceedings of the National Academy of Sciences. www.pnas.org/cgi/doi/10.1073/pnas.1415836112, pages1-6.
8. Vergara, G. G. R. V., Rose, J. B., and Gin, K. Y. H., 2016. Risk Assessment of Noroviruses and Human Adenoviruses in Recreational Surface Waters. Water Research Vol. 103, Pages: 276-282 DOI: 10.1016/j.watres.2016.07.048.
9. Nshimyimana*, J.P., Martin, S.L., Flood, M., Verhougstraete, M.P., Hyndman, D.W., and Rose, J.B. 2018. Regional Variations of Bovine and Porcine Fecal Pollution as a Function of Landscape, Nutrient, and Hydrological Factors. J. Environmental Quality 47 (5): 1024-1032
10. Zeki, S.; Aslan, A.; Burak, S and Rose, J.B. 2021 Occurrence of a human-associated microbial source tracking marker and its relationship with faecal indicator bacteria in an urban estuary . *Letters in Applied Microbiology* 72(2):167-177 DOI: 10.1111/lam.13405
11. Flood*, MT; Hernandez-Suarez, JS;; Nejadhashemi, AP; Martin, SL; Hyndman, D.; Rose, JB 2022. Connecting microbial, nutrient, physiochemical, and land use variables for the evaluation of water quality within mixed use watersheds Jul 1 2022 | *Water Research* 219: Article Number118526 DOI10.1016/j.watres.2022.118526
12. Wilson, AM; Martin, SL; Verhougstraete, MP; Kendall, AD; Zimmer-Faust, AG; Rose, JB; Bell, ML; and Hyndman, DW 2022 Detangling Seasonal Relationships of Fecal Contamination Sources and Correlates with Indicators in Michigan Watersheds *Microbiology Spectrum* Aug 31;10(4):e0041522 DOI: 10.1128/spectrum.00415-22
13. Demeter, K.; Linke, R.; Ballesté, E.; Reischer, G.; Mayer, R.E.; Vierheilig, J.; Kolm, C.; Stevenson, M.E.; Derx, J.; Kirschner, A.K.T.; Sommer, R.; Shanks, O.C.; Blanch, A.R.; Rose, J.B.; Ahmed, W.; Farnleitner, A.H. 2023. Have genetic targets for faecal pollution diagnostics and source tracking revolutionized water quality analysis yet? *FEMS Microbiology Reviews*. Vol.47, Iss 4 DOI10.1093/femsre/fuad028
14. D'Souza*, N.; Porter, AM; Rose, JB; Dreelin, E; Peters, SE; Nowlin, PJ; Carbonell, S; Cissell, K; Wang, YL; Flood, MT; Rachmadi, AT; Xi, CW; Song, P; Briggs, S. 2024. Public health use and lessons learned from a statewide SARS-CoV-2 wastewater monitoring program (MiNET) HELIYON 10 (16)
15. Ren*, W., Brantley, E.F., Wang, X., Rose, J.B. and Feng Y. 2025. Using bacterial and mitochondrial DNA markers to assess fecal pollution sources in stream water and sediments of a mixed land-use watershed J Appl Microbiol, Vol 136 (2) lxaf021, https://doi.org/10.1093/jambio/lxaf021

IDENTIFYING INFORMATION:

NAME: Henderson, Hayden

ORCID iD: https://orcid.org/0000-0003-1792-9548

POSITION TITLE: Senior Research Engineer

PRIMARY ORGANIZATION AND LOCATION: Michigan Technological University, Great Lakes Research Center, Houghton, Michigan, United States

Professional Preparation:

ORGANIZATION AND LOCATION	DEGREE (if applicable)	RECEIPT DATE	FIELD OF STUDY
Michigan Technological University, Houghton, Michigan, United States	PHD	01/2029	Atmospheric Science
United States Coast Guard, Cleveland, Ohio, United States	Other training	01/2019 - 01/2021	Master Captain - 100 Ton
Michigan Technological University, Houghton, Michigan, United States	MS	05/2019	Environmental Engineering
Michigan Technological University, Houghton, Michigan, United States	BS	05/2016	Environmental Engineering

Appointments and Positions

2025 - present Senior Research Engineer, Michigan Technological University, Great Lakes Research Center, Houghton, Michigan, United States

2025 - present Assistant Director, Michigan Technological University, Center for Environmental Engineering, Sensing, and Integrated Modeling, Houghton, Michigan, United States

2022 - 2024 Research Engineer II, Michigan Technological University, Great Lakes Research Center, Houghton, MI, United States

2022 - 2023 Adjunct Lecturer, Michigan Technological University, Civil, Environmental, and Geospatial Engineering, Houghton, MI, United States

2019 - 2022 Research Engineer, University of Michigan, Cooperative Institute for Great Lakes Research at National Oceanic and Atmospheric Association's Great Lakes Environmental Research Laboratory, Ann Arbor, MI, USA

2019 - 2019 Marine Science Technician, Cetacean Marine for U.S. Environmental Protection Agency, R/V Lake Guardian, Milwaukee, WI, USA

2017 - 2019 Research Assistant, Michigan Technological University, Great Lakes Research Center, Ecosystem Process Laboratory, Houghton, MI, USA

Products

Products Most Closely Related to the Proposed Project

1. Verhamme E, Bratton J, Austin J, Binding C, Collingsworth P, Dick G, Grand J, Hartig J, Henderson H, McKay R, Pioro-McGuire B, Riseng C, Varga E. The use of advanced and emerging technologies for adaptive ecosystem-based management of the Great Lakes. Aquatic Ecosystem Health & Management. 2024 April 01; 27(2):96-107. Available from: https://scholarlypublishingcollective.org/aehm/article/27/2/96/392782/The-use-of-advanced-and-emerging-technologies-for DOI: 10.14321/aehm.027.02.96
2. Lehmann MK, Gurlin D, Pahlevan N, Alikas K, Conroy T, Anstee J, Balasubramanian SV, Barbosa CCF, Binding C, Bracher A, Bresciani M, Burtner A, Cao Z, Dekker AG, Di Vittorio C, Drayson N, Errera RM, Fernandez V, Ficek D, Fichot CG, Gege P, Giardino C, Gitelson AA, Greb SR, Henderson H, Higa H, Rahaghi AI, Jamet C, Jiang D, Jordan T, Kangro K, Kravitz JA, Kristoffersen AS, Kudela R, Li L, Ligi M, Loisel H, Lohrenz S, Ma R, Maciel DA, Malthus TJ, Matsushita B, Matthews M, Minaudo C, Mishra DR, Mishra S, Moore T, Moses WJ, Nguyễn H, Novo EMLM, Novoa S, Odermatt D, O'Donnell DM, Olmanson LG, Ondrusek M, Oppelt N, Ouillon S, Pereira Filho W, Plattner S, Verdú AR, Salem SI, Schalles JF, Simis SGH, Siswanto E, Smith B, Somlai-Schweiger I, Soppa MA, Spyrakos E, Tessin E, van der Woerd HJ, Vander Woude A, Vandermeulen RA, Vantrepotte V, Wernand MR, Werther M, Young K, Yue L. GLORIA - A globally representative hyperspectral in situ dataset for optical sensing of water quality. Sci Data. 2023 Feb 16;10(1):100. PubMed Central PMCID: PMC9935528.
3. Li L, Fujisaki-Manome A, Miller R, Titze D, Henderson H. Evaluation of ICESat-2 Significant Wave Height Data with Buoy Observations in the Great Lakes and Application in Examination of Wave Model Predictions. Remote Sensing. 2024 February 14; 16(4):679-. Available from: https://www.mdpi.com/2072-4292/16/4/679 DOI: 10.3390/rs16040679

Other Significant Products, Whether or Not Related to the Proposed Project

1. Continued monitoring of harmful algal bloom driving nutrient dynamics in western Lake Erie using continuous sensor moorings. International Association of Great Lakes Research; ; c2021.
2. The glider flies while data drives: Assimilation and deep learning with high-resolution AUV data. International Association for Great Lakes Research; ; c2023.
3. Winter observations using cabled observatories and autonomous systems. Joint Aquatic Sciences Meeting; ; c2022.
4. Sea chest sees it best: pCO2 and water quality monitoring in Lake Erie's western basin using a ship-mounted flow through system. International Association of Great Lakes Research: State of Lake Erie; ; c2022.
5. Implementation of Slocum gliders for collaborative environmental observation in the Great Lakes. Joint Aquatic Sciences Meeting; ; c2022.

Certification:

I certify that the information provided is current, accurate, and complete. This includes but is not limited to information related to domestic and foreign appointments and positions.

I also certify that, at the time of submission, I am not a party to a malign foreign talent recruitment program. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not

limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Henderson, Hayden in SciENcv on 2025-11-14 08:53:28

Brian Haas
haasbe@buffalostate.edu

Education

M.A. Biology
SUNY Buffalo State August 2015

B.A. Economics. Concentration: Environmental Management. Minor: Biology.
SUNY Cortland May 2011

Relevant Skills

Ecological research, Buoy operation, Remote sensing, Mooring and anchoring, Data collection and analysis, Boating and trailering, Biotelemetry, Report preparation and budgeting.

Work Experience

Field Station Manager Great Lakes Center at SUNY Buffalo State Buffalo, NY
August 2024-Present
Managed the Great Lakes Center Field Station and associated assets. Carried out research projects and coordinated field work efforts. Built out buoy program and increased campus/local interest and support.

Research Technician Great Lakes Center at SUNY Buffalo State Buffalo, NY
May 2017- July 2024
Supported numerous research projects by providing technical, field, and laboratory assistance. Supported maintenance, deployment, and retrieval of the Dunkirk Buoy. Conducted field and lab work including but not limited to: remote sensing, electrofishing, trap netting, water sampling, benthic sampling, and species identification. Trained graduate students on boating, trailering, and proper research techniques. Ensured that Great Lakes Center assets, such as boats, vehicles, sampling equipment, and facilities were properly cared for and ready for use. Led educational efforts and tours in Lake Erie and the Niagara River.

Environmental Scientist AECOM Buffalo, NY
January 2016-April 2017
Conducted wetland delineations, invasive species surveys, and rare, threatened, and endangered species assessments for numerous projects. Collected environmental data and created reports for each specific field task. Performed acoustic bat surveys. Managed the environmental permitting needed for a variety of projects.

Research Biologist Research Foundation for SUNY Buffalo, NY
March 2013-August 2015
Conducted habitat assessment, environmental monitoring, surveying, and trapping in the Upper Niagara River. Operated, trailered, and maintained a research vessel equipped with telemetry equipment. Outfitted targeted turtles with radio and sonic transmitters and tracked them for 2 years. Analyzed habitat use, behavior, and movement of both native and invasive turtles. Worked with a diverse team to solve ecological problems and devised management plans.

Lydia Paulic

lydiapaulic12@gmail.com (226) 350 6461

RELEVANT EXPERIENCE

Glider Technician

Great Lakes Institute for Environmental Research, University of Windsor (Jan 2024-present)

- Maintenance, deployment, and piloting of Autonomous Underwater Vehicles (Slocum gliders) for the Real-time Aquatic Ecosystem Observation System (RAEON)
- Diagnosing complex electro-mechanical failures, integrating scientific sensors, and generating detailed reports
- Preparing gliders for missions, including ballasting, vacuum checks, and software configuration
- Processing and quality control of data returned by gliders in real time and post-mission
- Data entry and maintenance of large dataset, statistical analysis, and visualization in Excel and R
- Designed and executed first-use testing protocols, evaluating sensor accuracy and stability against baseline measurements in lab, while documenting performance across varying depths, temperatures, and lakes
- Developing a new freshwater glider program in the Great Lakes in collaboration with NOAA-GLERL, CIGLR, GLATOS, and other groups
- Work variety of shifts (days, nights, weekends), often in adverse weather conditions
- Manuscript review (Journal of Great Lakes Research, acoustic telemetry; Reviews in Fish Biology and Fisheries, stable isotopes and acoustic telemetry)
- Communication of results via oral presentations and manuscript preparation

Laboratory Manager

School of the Environment, University of Windsor (June 2021-Jan 2024)

- Managed a large research laboratory specializing in aquatic food webs and ecosystem dynamics within the Great Lakes, including operation and maintenance of mass spectrometers (Costech 4010 EA, ThermoFlash EA, Delta V and Delta V (dual inlet)) for stable isotope analysis
- Analyzed, curated, and maintained scientific datasets for domestic and international academic and government collaborators, ensuring data integrity and accessibility (Ministry of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, and numerous Universities)
- Managed laboratory communications, including oversight of social media platforms and maintenance of the laboratory website to support outreach and stakeholder engagement.
- Research of analytical methods, validations of new and current methods, review analytical data, prepare reagents, routine maintenance
- Recruited, trained, and supervised undergraduate researchers and student employees, fostering technical competency and adherence to laboratory protocols
- Ensured implementation and compliance with laboratory health and safety standards, maintaining a safe and regulated research environment.
- Administered up to 20 research grant accounts annually, overseeing budgeting, financial tracking, client billing, procurement of materials and equipment, and establishment of student contracts.
- Track project expenditures – mileage, travel expenses, equipment purchases

Student Research Assistant

School of the Environment, University of Windsor (Jan 2022-Dec 2023)

- Collaborate and coordinate research with the Ministry of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, Department of Fisheries and Oceans Canada, and Carleton University
- Lead collaborative acoustic telemetry project assessing the post-stocking survival and behaviour of hatchery-reared juvenile bloater across three bathymetric depths in Lake Ontario
- Experience related to thesis, including:
    - Develop, coordinate, and conduct acoustic telemetry arrays and analysis of high-residence (180 kHz) data
    - Surgery – length, weight, tissue samples (gill and fin for genomics), surgery for acoustic tag implementation, recovery process following surgery
    - Acoustic receiver and environmental sensor (temperature, dissolved oxygen, light, chlorophyll-a, salinity, CDOM) deployment, retrieval, and download

    - Non-lethal sampling with sedation and tag implementation of fishes (5g-2000g) using a TENS unit and buffered MS-222
    - Coordinate the recruitment, hiring, and training of undergraduate field technicians
    - Oversee the recruitment, mentoring, and training of undergraduate field and lab technicians
- Assist on additional projects:
    - Fish tagging – acoustic tags via surgical implementation, PIT tags, and FLOY tags
    - Limnological sampling – temperature/dissolved oxygen profiles (YSI probe), other abiotic parameters (RBR sensor), zooplankton tows, macroinvertebrate sampling (rock sampling, Hester-Dendy), mussel sample collection
    - Deploy NexSens CB-150, -450, -950 buoys and associated hazard buoy sensor lines, water quality assessments (water sample collection), and biofilm collection on Lake Erie
    - Use of multiple fish sampling gears – benthic multi-mesh gill nets, pelagic gill nets, trap nets, minnow traps, angling, boat and backpack electrofishing
    - Fish data collection – species identification, length, weight, tissue samples (fin, scales, gills, muscle, liver, otolith, red blood cells, plasma), sex, maturity status, stomach content analysis
    - Stable isotope analysis of biological samples for carbon, nitrogen, and sulphur stable isotopes, including preparation, operation and maintenance of Delta V and Delta VI (dual inlet) mass spectrometers
    - Conducted literature searches and summarized the information in an appropriate format for specific studies
- Small boat operation and trailering; operation of university owned vehicles (F150, F250, diesel Ram1500)
- Comfortable operating boats in safe manner under inclement and adverse weather conditions
- Perform routine maintenance and repair of sampling equipment (net repair, sensor calibration, glider calibration)
- Data entry and maintenance of large dataset, statistical analysis, and visualization in Excel and R
- Communication of results via oral presentations at conferences and manuscript preparation
-

Undergraduate Research Assistant (Jan 2019 – June 2021)

- Stable isotope sample preparation – drying of samples, weighing micro-amounts of samples
- Use of multiple fish sampling gears – benthic multi-mesh gill nets, pelagic gill nets, trap nets, minnow traps, angling, boat and backpack electrofishing
- Sample freshwater benthic invertebrates (rock sampling), mussels, and zooplankton
- Perform routine maintenance and repair of sampling equipment and mass spectrometers
- Work independently as well as part of a lab

EDUCATION

M.Sc. Earth Sciences, University of Windsor, Windsor, Ontario, Canada (Jan 2022 – Dec 2023)

- Thesis title: Evaluation of post-stocking survival and movement of hatchery-reared juvenile bloater (*Coregonus hoyi*) stocked across bathymetric depths in Lake Ontario

B.S. Biology, University of Windsor, Ontario Canada (Sept 2017 – May 2021)

- Major: Biology and Biochemistry – Health Sciences

OTHER CERTIFICATIONS

Canada Pleasure Craft Operator Certificate
Canada Small Domestic Vessel, Basic Safety Certificate
Slocum Glider Introductory Certificate
WHMIS
Standard First Aid and CPR

PUBLICATIONS

- Ivanova, S. V., Al-Nazzal, S., Andersen, A. M., Bendig, T., Jones, Z. D., Lyons, J., **Paulic, L.L**., Robinson, R. L., Stewart, N. D., Heuvel, C. E. 2024. Towards an enhanced understanding of animal ecology and aquatic systems via an integrated stable isotope-acoustic telemetry approach– a review and future directions. Rev Fish Biol Fisheries (2025).https://doi.org/10.1007/s11160-02509970-7

- **Paulic, L.L**., Ivanova, S.V., Morton, K., Sweka, J., Gorsky, D., Johnson, J., Ferrell, C., Weidel, B., Gatch, A., Johnson, T.B., and Fisk, A.T. 2024. Evaluation of post-stocking survival and movement of hatchery-reared juvenile bloater (*Coregonus hoyi*) stocked across bathymetric depths in Lake Ontario using acoustic telemetry. *Canadian Journal of Fisheries and Aquatic Sciences, 82*, 1-14.
- **Paulic, L.L**., Robinson, R., Miller, R., Hayden, T., Holbrook, C., Johnson, T., Johnson, K., Webber, D., Smith, C., Fraser, T., and Fisk, A.T. 2025. Advancing fish tracking in the Great Lakes: utilizing Slocum Gliders equipped with acoustic receivers. (*in preparation).*
- **Paulic, L. L**., Robinson, R. L., Miller, R., Hayden, T. A., Holbrook, C. M., Johnson, T. B., Johnson, K., Webber, D. M., and Fisk, A. T. (2025). Advancing fish tracking in the Great Lakes: utilizing Slocum Gliders equipped with acoustic receivers. (*in preparation).*
  Morton, K., Johnson, R. J., Farrell, C, Mustafa, I., Sweka, J., **Paulic, L.L**., Ivanova, S. V., Gorsky, D., Johnson,T. B., and Fisk, A. T. (2025). Post-stocking mortality and behavior of age-1 lake trout (*Salvelinus namaycush*) in Lake Ontario. (*in prep.)*

PRESENTATIONS

- **Paulic, L**. Introduction to Autonomous Underwater Vehicles: Slocum Gliders. Oral presentation at REAON, University of Windsor, Windsor, Ontario, Dec 3, 2025
- **Paulic, L.L**., Robinson, R., Miller, R., Hayden, T., Possamai, B., Stockwell, J., Rosier, K., Ruberg, S., Johnson, K., Webber, D., Smith, K., Fraser, T., Wells, M., and Fisk, A.T. 2025. Novel applications of Slocum gliders: advancing freshwater ecosystem monitoring. Cleaner Earth and Atmosphere (CEA) 2025, Windsor, ON. June 19-20.
- **Paulic, L.L.,** Robinson, R., Hayden, T., Miller, R., Johnson, K., Webber, D., Smith, K., Fraser, T., Johnson, T., and Fisk, A.T. 2025. Detection efficiency of glider-mounted acoustic receivers using existing receivers and a novel mobile receiver. GLATOS Annual Coordination Meeting 2025, Ann Arbor, MI. February 25 – 27.
- Fisk, A., Johnson, K., Robinson, R., Leadley, T., and **Paulic, L**. 2025. Simultaneous detection of fish and collection of environmental data in the Great Lakes. GLFC TechnoScience Webinar, Ann Arbor, MI. Feb 13.
- **Paulic, L.L.,** Ivanova, S.V., Morton, K., Sweka, J., Gorsky, D., Johnson, J., Ferrell, C., Weidel, B., Gatch, A., Johnson, T.B., and Fisk, A.T. 2024. Post-stocking survival of hatchery-reared deep-water fish in Lake Ontario. American Fisheries Society (AFS) 2024. Sept. 14 - 19.
- **Paulic, L.L**., Johnson, K., Miller, R., Hendersen, H., Fisk, A.T. 2024. Using glider-based acoustic telemetry to inform fish movements in the Great Lakes. UG2 Workshop 2024, Ann Arbor, MI. Sept 10-12.
- **Morton, K**., Gorsky, D., Sweka, J., Fisk, A., Johnson, T., Johnson, J., Farrell, C., Kronisch, G., Paulic, L., Ivanova, S., Weidel, B., Mason, D., Gatch, A., Walquist, R., Le Tarte, L., Hoffman, G., and Nguyen, M. 2024. Post-stocking mortality and behaviour of age-0 bloater (*Coregonus hoyi*) and Lake Trout (*Salvelinus namaycush*) in Lake Ontario. New York Chapter of the American Fisheries Society, Cooperstown, NY, Feb 6-8, 2024.
- **Paulic, L.L**., Ivanova, S.I., Gorsky, D., Sweka, J.A., Johnson, T.B., and Fisk, A.T. 2024. Post-stocking survival of hatchery-raised juvenile bloater (*Coregonus hoyi*) and lake trout (*Salvelinus namaycush*) across bathymetric depths in Lake Ontario. GLATOS Annual Coordination Meeting 2024, Ann Arbor, MI. Feb 26 – Feb 29.
- **Paulic, L.L**., Ivanova, S.I., Gorsky, D., Sweka, J.A., Johnson, T.B., and Fisk, A.T. 2024. Quantifying survival of stocked bloater (*Coregonus hoyi*) across varying depths in Lake Ontario. GLATOS Annual Coordination Meeting 2023, Sarnia, ON. Feb 27 – Mar 2.
- **Paulic, L**., Ivanova, S., Gorsky, D., Fisk, A., Sweka, J., Cooke, S., Burton, D., Jefferies, K., Webber, D., and Johnson, T. Mortality and behaviour of stocked bloater across varying depths in Lake Ontario, Ocean Tracking Network Conference, Halifax, Nova Scotia, Nov 7-9, 2022

OUTREACH

- Sept 2025. Lake Superior. Supported the first live-stream broadcast from the R/V Blue Heron on Lake Superior, highlighting collaborative, multi-institutional research on the Superior Shoals ("underwater Everest") and advancing public engagement through real-time scientific storytelling
- June 2025. City of Windsor, Meet-a-Machine Event. showcased a Slocum glider to engage the public in hands-on learning about autonomous underwater vehicles and their applications in environmental monitoring and Great Lakes research

Curriculum Vitae of Harvey Bootsma

Harvey Bootsma, Professor
University of Wisconsin-Milwaukee, School of Freshwater Sciences
600 E. Greenfield Ave.
Milwaukee, WI, 53204

EDUCATION

- NOAA Great Lakes Environmental Research Lab, Postdoctoral Fellowship, 1993-1994
- University of Manitoba, Canada, Limnology, Ph.D., 1993
- University of Guelph, Canada, Marine Biology, Honors B.Sc., 1985

POSITIONS HELD

- Kohler Endowed Chair of Great Lakes Science, 2025 – present.
- Professor, UWM School of Freshwater Sciences, University of Wisconsin-Milwaukee, 2019 – present
- Associate Professor, School of Freshwater Sciences, University of Wisconsin-Milwaukee, 2010 – 2019
- Associate Scientist, Great Lakes WATER Institute, University of Wisconsin-Milwaukee, 2004 – 2010
- Assistant Scientist, Great Lakes WATER Institute, University of Wisconsin-Milwaukee, 1999 – 2004
- Adjunct Professor, Department of Biological Sciences, University of Wisconsin-Milwaukee, 2000 – 2010
- Science Advisor, World Bank Project Supervision Team, Lake Victoria Environmental Management Project (1999 - 2005)
- Adjunct Senior Lecturer, University of Malawi, 1998 – 2004
- Senior Limnologist, Lake Malawi/Nyasa Biodiversity Conservation Project (contracted to Canadian Department of Fisheries and Oceans), 1996 – 1999
- Research Fellow, Cooperative Institute for Limnology and Ecosystems Research, University of Michigan, 1994-1996

PROFESSIONAL MEMBERSHIPS

- American Society of Limnology and Oceanography
- International Association for Great Lakes Research
- International Association of Theoretical and Applied Limnology

ADVISORY ROLES

* Contributor to "Global Environmental Outlook 4", 2024. A review of the state of the world's environment, providing guidance for environmental policies, action planning and resource allocation. UNESCO / International Union for Conservation of Nature.
* Member of Great Lakes Fishery Commission workshop steering committee: A Food-web Approach to Lake Whitefish Conservation and Restoration.
* Co-authored sub-indicator chapter in State of the Great Lakes Technical Reports for 2011, 2017, 2019, 2022, and 2025.
* Editorial Board, Freshwater Biology. (2015 - present).
* Great Lakes Spawning Whitefish and Invasive Mussels (SWIM) Project Core Planning Team, 2025 – present.
* Member, Invasive Mussel Collaborative. 2022 – Present.
* Science Advisory Board, Annis Water Resources Institute, Grand Valley State University. (2008 - present).
* Member of the Invasive Mussel Collaborative Research Work Group (coordinated by the Great Lakes Commission, USGS, and NOAA).
* International Joint Commission Science Advisory Board Work Group on Productivity of the Great Lakes. (2017 - 2018).
* *Cladophora* Research, Monitoring and Modeling Workgroup (Environment and Climate Change Canada), (2016 - 2017).
* Lake Michigan Lower Trophic Level Task Group (overseen by USGS). (2016-2017).
* Science Advisor, Equatorial African Deposition Network. Supported by the Global Environmental Facility (GEF) and the United Nations Environment Programme (UNEP). (2007 - present).
* Science Advisor, World Bank Project Supervision Team, Lake Victoria Environmental Management Project (1999 - 2005).

SELECTED PUBLICATIONS (Total > 120)

Turschak, B.A., Smith, J.B., Breaker, B.S., Bronte, C.R., Bunnell, D.B., Jonas, J.L., Kornis, M.S., LaFaver, C., Pangle, K.L. and Bootsma, H.A., 2025. Stable C and N isotope analyses redefine cisco as pelagic piscivores in Lake Michigan. J. Great Lakes Res. p.102504.

Maitland, B.M., H.A. Bootsma, C.R. Bronte, D.B. Bunnell, Z.S. Feiner, K.H. Fenske, W.W. Fetzer, C.J. Foley, B.S. Gerig, A. Happel, T.O. Höök, F.W. Keppeler, M.S. Kornis, R.F. Lepak, A.S. McNaught, B.M. Roth, B.A. Turschak, J.C. Hoffman, and O.P. Jensen. 2024. Testing food web theory in a large lake: the role of body size in habitat coupling in Lake Michigan. Ecology 105 (10): e4413.

Bockwoldt, K.A., H.A. Bootsma, and B. M. Lesht. 2023. Spatial, seasonal, and historical variation of phytoplankton production in Lake Michigan. J. Great Lakes Res. 49:246-267.

Turschak, B.A., C.R. Bronte, S. Czesny, B. Gerig, A. Happel, T.O. Höök, M.K. Kornis, B.S. Leonhardt, B.G. Matthias, J. Rinchard, D. Warner, and H. Bootsma. 2022. Temporal variation in the niche partitioning of Lake Michigan salmonines as it relates to alewife abundance and size. Can. J. Fish. Aquat. Sci. 79(3):487-502.

Cannon, D.J., C. Troy, H.A. Bootsma, Q. Liao, and R. MacLellan-Hurd. 2021. Characterizing the Seasonal Variability of Hypolimnetic Mixing in a Large, Deep Lake. J. Geophys. Res: Oceans 126, e2021JC017533.

Happel, A., B. Leonhardt, T. Hook, H. Bootsma, C. Bronte, M. Kornis, S. Czesny, B. Turschak, C. Maier, and J. Rinchard. 2020. Fatty acids reveal salmonine – prey relationships in Lake Michigan. J. Great Lakes Res. 46(6):1689-1701.

Leonhardt, B.S., A. Happel, H. Bootsma, C.R. Bronte, S. Czesny, Z. Feiner, M.S. Kornis, J. Rinchard, B. Turschak, and T. Höök. 2020. Diet complexity of Lake Michigan salmonines: 2015-2016. J. Great Lakes Res. 46(4):1044-1057.

Shen, C., Q. Liao, and H.A. Bootsma. 2020. Modelling the influence of invasive mussels on phosphorus cycling in Lake Michigan. Ecol. Model. 416:108920.

Bravo, H.R., H. Bootsma, and B. Khazaei. 2019. Fate of phosphorus from a point source in the Lake Michigan nearshore zone. J. Great Lakes Res. 45(6):1182-1196.

Bootsma, H.A., and R.E. Hecky. 2019. Inputs, outputs, and internal cycling of phosphorus in tropical Lake Malawi. Pages 407-429 In, Steinman, A., and B. Spears (eds.), Internal phosphorus loading: Causes, case studies, and management. J. Ross Publishing, Plantation, FL, USA.

Turschak, B.A., S. Czesny, J.C. Doll, B.K. Grunert, T.O. Höök, J. Janssen, and H.A. Bootsma. 2019. Spatial variation in trophic structure of nearshore fishes in Lake Michigan as it relates to water clarity. Can. J. Fish. Aquat. Sci. 76:364-377.

Shen, C., Q. Liao, H.A. Bootsma, C.D. Troy, and D. Cannon. 2018. Regulation of plankton and nutrient dynamics by profundal quagga mussels in Lake Michigan: A one dimensional model. Hydrobiologia 815:47-63. doi: 10.1007/s10750-018-3547-6.

Pilcher, D.J., G.A. McKinley, J. Kralj, H.A. Bootsma, and E.D. Reavie. 2017. Modeled sensitivity of Lake Michigan productivity and zooplankton to changing nutrient concentrations and quagga mussels. J. Geophys. Res. Biogeosci. 122(8):2017-2032.

Tyner, E., H.A. Bootsma, and B. Moraska-Lafrancois. 2015. Dreissenid metabolism and ecosystem-scale effects as revealed by oxygen consumption. J. Great Lakes Res. 41 (Suppl. 3):27-37.

Turschak, B.A., D. Bunnell, S. Czesny, T.O. Höök, J. Janssen, D. Warner, and H.A. Bootsma. 2014. Nearshore energy subsidies support Lake Michigan fishes and invertebrates following major changes in food web structure. Ecology 95(5): 1243-1252.

Bootsma, H.A., and Q. Liao. 2014. Nutrient cycling by dreissenid mussels: Controlling factors and ecosystem response. Pages 555-574 In: T.F. Nalepa and D.W. Schloesser (eds.), Quagga and zebra mussels: biology, impacts and control (2nd ed.). Taylor and Francis.